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ABSTRACT

One of seven career education programs chosen for nationwide dissemination by the Department of Health, Education and Welfare's Joint Dissemination Review Panel (JDRP), Project MATCH (Matching Attitudes and Talents to Career Horizons) is being conducted for grades K-8 in Ontario, California. For the years 1974-78, it received federal funding under ESEA Title IV-C. Developed to infuse career education into the regular curriculum, the project covers ten areas: career awareness, self-awareness, attitude development, educational awareness, economic awareness, consumer competencies, career orientation, career exploration, career planning and decision making, and civic responsibilities. One hundred and ten infusion units have been developed as well as the following five special programs: Simutown, Individualized Reading Center Program, English Course of Study, Citizen Apprentice Program, and Individualized Learning Activity Packages. To evaluate the project's effectiveness, four project-developed career education tests were administered to both treatment and control students in each grade. Based on the test results and the large sample used in the tests, it was concluded that the project produces educationally significant results. (The review process that this and the other six projects underwent prior to JDRP submission and approval is described in CE 214-215.) (EL G)

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PROJECT MATCH

Ontario-Montclair School District
Ontario, California

A Submission to the
Joint Dissemination Review Panel

Octave V. Baker
American Institutes for Research

28 February 1978

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CE 020 233

PROGRAM AREA: Career Education

ACTIVITY TITLE, LOCATION: Matching Attitudes and Talents to Career Horizons (Project MATCH)
Ontario-Montclair School District
Ontario, California

DEVELOPED BY: The activity was developed by the personnel of the Ontario-Montclair School District.

SOURCE AND LEVEL OF FUNDING: Funds for the first three years of the project (1974-1977) were provided by an ESEA Title IV-C Developmental Innovative Grant. The source of funding for 1977-78 is an ESEA Title IV-C Dissemination Grant. The level of funding is as follows:

Grant Period	Level of Funding
1974-75	$103,034
1975-76	36,432
1976-77	81,971
1977-78	52,500
	$323,937

YEARS OF ACTIVITY DEVELOPMENT: 1974-1977

BRIEF DESCRIPTION OF ACTIVITY

Purpose

Project MATCH is designed to infuse a career education component into the regular curriculum of a K-8 school district program. The project has developed behavioral objectives in ten areas of career education; a grade-by-grade guide to achieving these objectives; a series of curriculum infusion units (110) that integrate career education concepts with most curricula areas; special individualized programs; a simulation program in civics; and career education evaluation instruments (both formative and summative). The project has also developed an in-service training model to introduce teachers to the project.

Background

Project MATCH was developed in response to a set of needs identified by parents, teachers, and administrators in the Ontario-Montclair School District. For some time before the project was established, these groups believed that the district curriculum, particularly at the junior high level, needed revision and extension. They shared a general feeling that the curriculum was somewhat narrow, antiquated, and irrelevant to the real-life aspirations of students. In particular, these groups were concerned that the existing curriculum was not adequately preparing students to enter the job market. Furthermore, they were concerned about the students' generally low scores on standardized tests of basic skills, and they believed that the situation could be improved if students understood why basic skills are needed for success in the job market.

In response to all of these concerns voiced by teachers, parents, and administrators, the district initiated a formal needs assessment, surveying parents, teachers, and community members. The following are some of the survey results that led to the establishment of Project MATCH:

1) Students lacked an understanding of career education concepts and indicated that they learned very little from school regarding available careers and jobs.

2) Students generally felt that the guidance and counseling services available were inadequate.

3) Most eighth graders indicated that they intended to enter the labor force as soon as they graduated from high school, if not earlier.

4) A majority of eighth graders indicated that they already had careers in mind. (This finding suggested that students were making career choices without adequate information, since there was no organized career education program in the district at this time.)

5) The teaching of career education was at best fragmented and uncoordinated.

Goals and Objectives

The curriculum infusion units and the content-oriented special programs are designed to assist students in the attainment of "terminal performance objectives" (T.P.O.s) in ten career education areas. For each area, a "general terminal performance objective" (G.T.P.O.) was developed that summarizes the T.P.O.s within it. The ten career education areas and their associated G.T.P.O.s are as follows:

1) Career awareness: Students will have been exposed to the various career clusters and will realistically select those clusters related to their individual aptitudes, interests, and abilities.

2) Self-awareness: Students will develop a positive attitude toward self and others, attach worth and value to work, and find meaning and direction to life through school experience.

3) Attitude development: Students will develop positive attitudes toward work by understanding the contribution work makes to humanity.

4) Educational awareness: Students will recognize their educational experiences as an integral part of their total career preparation and development.

5) Economic awareness: Students will be aware of the basic structure of our economic system and the freedom experienced therein, through recognition of economic options available to them.

6) Consumer competencies: Students will, through various experiences, such as role playing, guidance of teachers, and use of community resources, become aware of and competent in their role as consumers.

7) Career orientation: Students will use career information that will reveal job options available to them in the world of work.

8) Career exploration: Students will participate in a program of career exploration that will contribute to personal and career satisfaction.

9) Career planning and decision making: Students will participate in their career development process and increase their knowledge of themselves, the world of work, and the society that affects them.

10) Civic responsibility: Students will realize their roles (rights, responsibilities, and privileges) as citizens in a democratic society.

Claims of Effectiveness

Project MATCH represents an effective approach to infusing career education concepts into the regular classroom curricula. Project students, when compared with a comparable control group, showed significant growth in their career development as reflected by their achievement of objectives in the ten areas of career education outlined above. Student growth was assessed by project-developed evaluation instruments with a high degree of validity and reliability. The project's activities are easily transportable since they can be implemented by teachers without disrupting existing programs and without adding special periods, special counseling, or other staff.

Context and Intended Users

The Ontario-Montclair school district is located 40 miles east of Los Angeles in the west end of San Bernardino County. The economy of the area was originally based on citrus fruits and vineyards. The economic importance of agriculture, however, greatly diminished after World War II, although Sun Kist, Inc., maintains its orange processing plant within the school district. Major employers within the school district and the surrounding areas now include General Electric, Lockheed Air Service, and Kaiser Steel. A number of smaller industries are also located in the area. Even with this variety of industrial establishments, however, the area has an unemployment rate of nearly 10 percent, which is higher than that of many surrounding areas.

The district encompasses a wide range of socioeconomic and ethnic groups. The population is approximately 60% white, 34% Spanish surnamed, 5% black, and 1% other ethnic groups. The population is predominantly working class, with most family heads employed in unskilled or semi-skilled positions. Approximately 20% of the workers hold managerial or professional positions. The schools chosen to participate in Project MATCH reflect the diverse social and ethnic composition of the school district.

The effectiveness of the project with this heterogeneous group of students indicates that it is appropriate for a broad spectrum of students. Further support for this contention is offered by an analysis conducted of the project's effects on various subgroups. Groups were defined by sex, intelligence, ethnic group (Spanish surnamed versus non-Spanish surnamed), and socioeconomic status. The results of the analysis revealed no significant differences for most groups in their attainment of the project's objectives.

Activity Description

Grade levels, years of operation, size. The project has been in operation since September 1974. During its third year of operation, 1976-77, it served 1824 children in grades K-8.

Staffing. Project MATCH operates within the framework of existing school staffing arrangements. Because it is curriculum oriented, it does not require changes in regular staff assignments, duties, or procedures. Its professional staff consists of the project specialist (director), who works with the local school administrators and teachers in developing, implementing, and evaluating the project curriculum.

To replicate the project most small school districts could use their existing staff with perhaps the addition of a part-time clerical person to duplicate materials. Large districts, however, may need to hire a part-time director to coordinate the project activities. Schools adopting the project will also need to hire someone to conduct two or three days of in-service training for staff.

Curricula and materials. Project MATCH has developed a complete educational program for introducing and infusing career education concepts into the regular curriculum. The program consists of the following major elements:

1) "Terminal Performance Objectives": This is a scope and sequence for the entire program and includes an "introduction," "reinforcement," and "mastery schedule" as well as a "mastery level definition."

2) "Career Education Skill Continuum": This is an extensive grade-by-grade guide to achieving the objectives contained in the "terminal performance objectives." It is keyed to subject areas and includes suggested resources, both project-developed and commercial. It also contains a section on evaluation that suggests measures and methods for determining student achievement.

3) Evaluation Instruments: Four evaluation instruments with known validity and reliability have been developed to assess student attainment of career education objectives. These instruments are "Career Awareness" K-1, "Career Awareness" 2-3, "Career Concepts" 4-6, and "Personal Career Readiness" 7-8. Details regarding the development and validation of these instruments are presented later.

4) Infusion units: A series of these units (110) has been developed that integrates career education objectives and concepts with a wide range of content areas at every grade level from K-8. The units are written in the following format: concepts, performance objectives, activities, resources, and evaluation. The units are teacher-developed and they provide a solid base for infusing a career education component into the regular curriculum.

   A number of the infusion units (30) are keyed to the "Experiential Taxonomy."[1] They contain student objectives with activities, learner behaviors, learning principles, and teaching strategies, all keyed to the taxonomy. The units are further keyed taxonomically to levels of problem solving, critical thinking, and creativity. Suggested resources are included as well as strategies for implementation and for the assessment of students' growth.

5) Special programs: Special programs are courses of study or special curricula of a substantive nature which include career education concepts as well as subject area material. There are five major special programs:

   Simutown: (Grades 5-6-7-8) This highly successful and well-accepted program has been contracted for publication by Occupational Awareness, Inc., of Los Alamitos, California. Its major simulation activities are centered in banking, business operation, and city government. It is strong in the content areas, particularly mathematics, language arts, and social studies. It contains a program pre-post test, suggested vocabulary tests, and other evaluation instruments. The program has been successfully used in grades 5 through 8 and is popular with teachers, students, and the community.

[1] The Experiential Taxonomy: A New Approach to Teaching and Learning, Norman Steinaker and M. Robert Bell, Ontario, California, 1977; "A Proposed Taxonomy of Educational Objectives: The Experiential Domain," Norman Steinaker and M. Robert Bell, Educational Technology, January 1975, pp. 14-16; "A Model for Developing Classroom Experiences Through the Experiential Taxonomy," Norman Steinaker and M. Robert Bell, Educational Technology, November 1975, pp. 65-68; "An Evaluation Design Based on the Experiential Taxonomy," Norman Steinaker and M. Robert Bell, Educational Technology, February 1976, pp. 26-29; and "How Teachers Can Use the Experiential Taxonomy," Norman Steinaker and M. Robert Bell, Educational Technology, November 1976, pp. 49-52.

Individualized Reading Center Program: (Grades 7-8) This is a Career Education oriented contract. Commercially prepared materials are available in a resource area in the reading center of the target junior high. These materials have been coded by reading levels which range from fourth to twelfth grade levels. As students attain improved reading skills in vocabulary and comprehension, as measured by CTBS tests administered three times a year and more frequent teacher evaluation, they are moved to career materials of greater reading difficulty. Career filmstrips, tapes, kits, and hardback texts are used. Students are given the opportunity to practice decision making since they are allowed to choose the specific activities within their abilities and the four aspects of self-awareness, career awareness, job families, and specific job studies.

English Course of Study: (Grades 7-8) Included in the program are: interest inventory, autobiography fact sheet, college worksheet (autobiography), personality quotient rating chart, employment self-quiz, career survey, what is the job, vocabulary, occupational areas, occupational groups, job exploration, crossword of life, personal fact sheet, ordering from a catalog, establishing credit, credit card application, applying for a driver's license, driver's license application, using the yellow pages, selecting a job, writing a sample business letter, a business letter, interviewing, references, completing an employment application form, salary deductions, fringe benefits, social security, applying for a social security number, researching to become an expert, career essay, college of your chosen field, high school preparation.

Citizen Apprentice Program: (Grades 7-8) The Citizen Apprentice Program provides junior high students with modified on-the-job work experience and on-site observation and evaluation of business practices. Arrangements are made with local businesses in a shopping area near the school to have junior high students assigned to them for 10 class periods, during which time the student actually works alongside of and observes his/her business partner as he/she goes about performing the duties of a job. This on-site observation is preceded by three weeks of intensive classroom preparation which involves a detailed study of shopping centers in general, job application, and interviewing. Before each visit to their assigned business, students are made aware of and are responsible for obtaining specific, pertinent facts regarding the operation of that business.

Individualized Learning Activity Packages: (Grades 7-8) There are a series of six Learning Activity Packages (LAPs): "Getting Started," "Ten Years From Now," "Careers: The Big Picture," "Career Closeup: Maybe I'll Become...," "Something of Value? Maybe I'll Become...," and "On My Way." A librarian, aide, counselor, or teacher is assigned to collect the student's completed material and retain the LAP summary. In regular classes, students contract to complete at least one LAP per quarter. Each LAP is a self-contained career-oriented individualized learning sequence, but in sequence, they comprise a mini-individualized Career Education program for students.

Facilities. Since the major focus of the project is on infusing career education concepts into the regular curriculum, it can operate in a regular classroom without any special modifications.

Staff development. Staff development has a number of components:

1) Summer writing workshops: Three workshops have been held to develop the major program components, write the Terminal Performance Objectives, and refine and edit learning materials.

2) Visitations: These include visits to other school districts with career education programs and visiting classrooms within the Ontario-Montclair District where career education is in progress.

3) Career Education-Community Seminars: The seminars deal with a theme or problem in career education and include teachers, administrators, county and state consultants, school board members, students and community members. Past seminars have focused on simulation, utilization of community resources, economic skills, consumer competencies, and curriculum planning.

4) Presentation in Staff Meetings: The project directors and teachers have made a number of presentations at staff meetings to review curriculum, infusion strategies, and other program elements.

Costs

The costs associated with adopting the project are presented in the chart below. Please note that the figures do not include developmental costs such as the salary for the full-time project director.

Level of Funding

	INSTALLATION (Non-Recurring Costs)	SUBSEQUENT YEARS (Recurring Costs)
Personnel (salary for part-time clerical)	$4,000	0
Personnel Training (for two or three days of inservice training)	375	0
Facilities	0	0
Equipment and Materials (for one set of project materials)	400	0
Consumables (for replacement of consumables)	0	100
Other Costs - Specify:		
Technical Assistance (at least one day of technical assistance is recommended during initial year of adoption)	125	
TOTAL	$4900	100

EVIDENCE OF EFFECTIVENESS

Evaluation Design: Evidence that the Effects are Attributable to the Intervention

The evaluation was conducted by the evaluation staff of the Ontario-Montclair School District, with some technical assistance provided by consultants from the California State Department of Education. The data reported here were obtained during the 1976-77 school year. The evaluation design utilized pre- and posttests

on intact treatment and control classes. These classes were randomly selected, one class per grade, from schools assigned to the treatment and control conditions. The treatment and control groups were each composed of one junior high and two elementary schools. The treatment schools were chosen because their teachers and administrators expressed interest in the project and because they received no special funding (e.g., Title I) that may have confounded the results of the evaluation. The control schools were chosen on the basis of their similarity to the treatment schools along such educationally relevant dimensions as socioeconomic status, ethnic composition, and student scores on the Cooperative Primary Test and the Comprehensive Test of Basic Skills.

Within each treatment and control school, participating classes were chosen in a manner that minimized selection bias. (The names of classroom teachers were placed in a hat and selected randomly by the project staff.) Table 1 shows that there were no significant differences between the pretest scores of treatment and control classes on the project-developed career education instruments. (A t-ratio was calculated only in those cases where the pretest scores of the treatment group were superior to those of the control group.) An analysis of student scores on the previously mentioned standardized tests also confirmed the equivalency of the treatment and control classes.

Table 1

Pretest scores of treatment and control groups

	Treatment Group			Control Group			
Grade	N	Mean	S.D.	N	Mean	S.D.	t*
K-1	53	16.2	4.1	42	16.8	6.7	---
2-3	37	17.8	4.9	39	16.5	5.3	1.1 (n.s.)
4-6	71	18.1	5.9	61	17.3	6.1	.76 (n.s.)
7-8	44	17.2	6.7	44	20.3	7.9	---

* The .05 level of confidence was used as the criterion.

Interpretability of Measures

Student attainment of project objectives was assessed by four project-developed career education tests administered in October and in March as pre- and posttests. Each test was designed for use with two grade levels. The tests contained multiple-choice items that reflected each of the ten previously discussed general areas of career education. The tests were developed over a period of three years by Project MATCH staff in collaboration with teachers in the treatment schools. A sample item from the Level III test is presented below:

Two kinds of income tax are usually taken out of the worker's pay in California. They are
(a) Federal and city
(b) Federal and State
(c) State and County
(d) State and City

Test development began with the project objectives, from which a pool of items was derived. The items were pilot-tested, reviewed by teachers, and modified accordingly. A formal reliability and item validity study of the tests was conducted during the spring of 1976 on project students. Pearson r correlation coefficients were calculated to establish the test-retest reliability of the instruments. Biserial r (the correlation of each item with the total test scores) was used to establish the item validity of the test. Test items developed in the previous year whose

validity index indicated very low correlations were discarded or modified, and, in one case, the length of a test was increased to achieve higher reliability and item validity for the instrument. The Pearson r and biserial r (mean) for each test are presented below, along with the number of items comprising each test.

Kindergarten - First Grade Level I (15 items)	
Pearson r Test-retest reliability	.92
Biserial r Item validity index (mean)	.40
Grade Two - Three Level II (41 items)	
Pearson r Test-retest reliability	.87
Biserial r Item validity index (mean)	.31
Grade Four - Six Level III (50 items)	
Pearson r Test-retest reliability	.81
Biserial r Item validity index (mean)	.35
Grade Seven - Eight Level IV (56 items)	
Pearson r Test-retest reliability	.88
Biserial r Item validity index (mean)	.29

Credibility of Evidence

All testing was conducted at the school sites. Tests were administered to treatment and control groups under similar conditions at approximately the same time. In grades K-3, the tests were administered orally by the project director or by members of his staff under his direct supervision. In grades 4-5, treatment and control teachers read the questions to the students, who used answer sheets for their responses. In grades 6-8, students read the questions and made their responses on answer sheets. The project director personally reviewed testing instructions with all teachers. He also reviewed, monitored, and approved all scoring procedures. The project evaluator was responsible for all data analysis.

Evidence of Impact

Mean posttest differences between treatment and control classes were analyzed using the t-test for independent groups. Table 2 shows that the treatment classes consistently out-performed the control classes by a wide margin on the posttests. On all four tests, group differences were highly significant. (Please note that the analysis was performed only on scores of those students who were present for both the pretest and the posttest.)

Table 2

Comparison of mean posttest scores of treatment and control groups

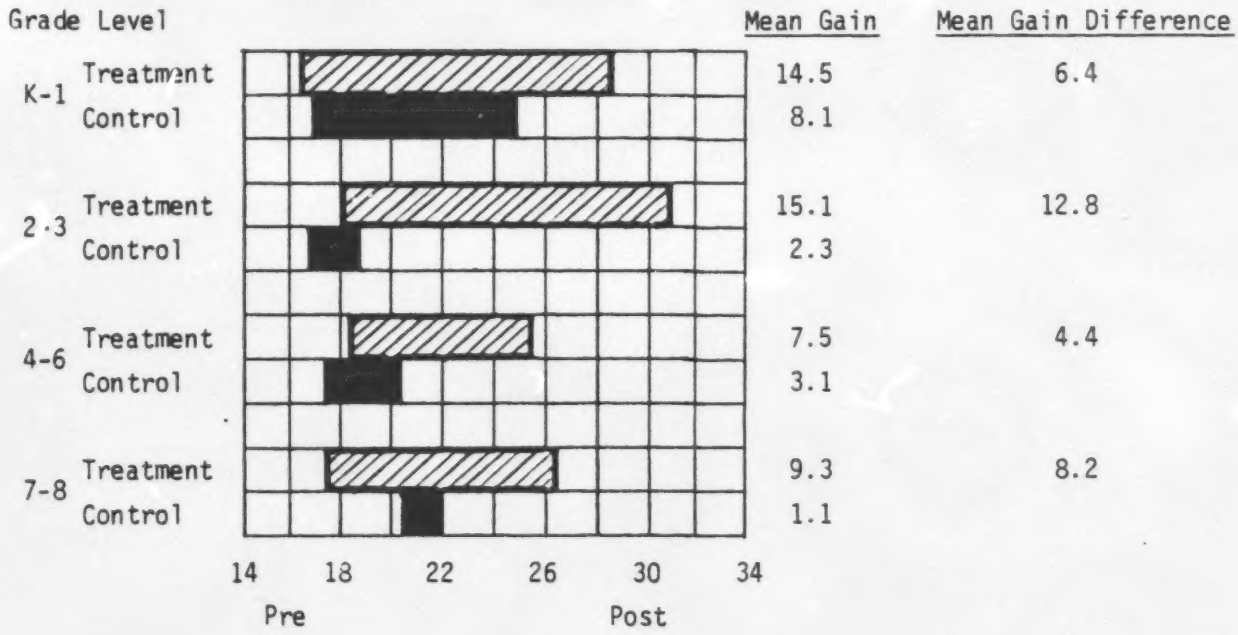
	Treatment Group			Control Group				
Grade	mean post-test score	N	S.D.	mean post-test score	N	S.D.	mean difference	t
K-1	30.7	53	12.0	24.9	42	7.8	5.8	2.70*
2-3	32.9	37	4.8	18.8	39	4.6	14.1	13.06*
4-6	25.6	71	8.9	20.4	61	6.4	5.2	3.80*
7-8	26.5	44	6.9	21.4	44	8.5	5.1	3.11*
Total		195			186			

* Significant at .01 level of confidence, one-tailed test.

Table 3 presents graphic evidence of the project's impact on the treatment classes. The table displays the pre-post mean gains of the treatment and control groups.

Table 3

Graphic display of pre-posttest gains



Comments

The nature of the evaluation design allows one to be confident that the gains observed in the treatment classes are in fact attributable to Project MATCH. The treatment and control classes were equivalent along such educationally relevant dimensions as socioeconomic status, ethnic composition, student scores on standardized achievement tests, and pretest scores on the project-developed instruments. In addition, the educational experiences of the two groups were similar, except, of course, for the fact that the treatment group was exposed to Project MATCH activities. The use of a comparable control group in the evaluation provides a highly credible estimate of how the treatment group would have performed had it not received the intervention. Thus, maturation effects, practice effects, out-of-school experiences, and other extraneous variables can be ruled out as possible explanations of the observed effects. In addition, teacher effects can be ruled out as a plausible explanation because the teachers who participated in the evaluation were randomly chosen from the treatment and control schools.

The career education instruments used to assess the impact of the intervention are highly credible because of the extensive test development process used that ensured their item validity and reliability. Furthermore, the well-supervised data collection and analysis procedures provide additional assurance that the findings are objective.

In general, the evaluation provides convincing evidence that Project MATCH produced educationally significant results. The fairly large sample that included grades K-8 and the high level of statistical significance attained indicate that the effects of the intervention can be reproduced consistently. The gains of the treatment group were large, exceeding those of the control group by a range of one-half of a standard deviation (at grades K-1) to almost three standard devia-

tions (at grades 2-3). Moreover, the gains are in areas generally accepted as important to career education. Additionally, the project's concepts, practices, and techniques are easily identifiable, have general application, and can be adopted elsewhere with minimal cost.